78. (New) The device of claim 70 wherein the first solvent is selected from the group consisting of hexane, decane, petroleum ether, an alcohol, isopropanol, and acetonitrile, and the second solvent is selected from the group consisting of isopropanol, hexane, and mixtures thereof.

79. (New) The device of claim 70 wherein the mixture comprises a supernatant.

80. (New) The device of claim 70 wherein the stream of gas comprises a gas selected from the group consisting of an inert gas and a noble gas.

81. (New) The method of claim 24 wherein the sample is selected from the group consisting of a seed, an agricultural product and a plant tissue.

REMARKS

New claims 46-81 have been added. Thus, Claims 1-81 are now pending in this application.

Claims 1-45 have been amended (where shown) to address informalities, correct typographical errors and clarify language. New Claims 46-81 have been added to claim previously unclaimed subject matter supported by the specification as originally filed.

Respectfully submitted,

JENKENS & GILCHRIST,
A Professional Corporation

Andre M. Szuwalski
Reg. No. 35,701

Date: September 4, 2001

1445 Ross Avenue, Suite 3200
Dallas, Texas 75202-2799
(214) 855-4795
(214) 855-4300 (fax)

Exhibit "A" - marked amended claims

1. (Amended) A method for determining oil content of a seed comprising the steps of:
extracting oil from a seed using a solvent;
evaporating said solvent in a stream of gas to form oil particles;
directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
detecting said reflected light; and,
determining said oil content based on said reflected light.

10. (Amended) The method of claim 1, wherein said step of evaporating is [done] performed in an evaporative light scattering detector.

12. (Amended) The method of claim 1, [wherein] further including the step of introducing said solvent [is introduced] into said stream of gas at a rate between 0.3 and 5 milliliters per minute.

14. (Amended) The method of claim 1, wherein said step of detecting said reflected light is [done] performed with a silicon photodiode.

15. (Amended) The method of claim 1, [wherein] further including the step of heating said stream of gas [is heated].

16. (Amended) The method of claim 1, further comprising the step of separating said seed from said solvent after said step of extracting.

17. (Amended) The method of claim 16, wherein said step of separating [comprises] is performed by centrifugation.

18. (Amended) The method of claim 1, further comprising the step of introducing said solvent into a second solvent prior to said step of evaporating.

24. (Amended) A method for determining oil content of a sample [a seed] comprising the steps of:
extracting oil from a [seed] sample using a solvent;
separating said solvent from said [seed] sample;
evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light; and,

determining said oil content based on said reflected light.

25. (Amended) The method of claim 24, further comprising the step of introducing said solvent into a second solvent prior to said step of evaporating.

26. (Amended) The method of claim 24, wherein said step of separating [comprises] is performed by centrifugation.

27. (Amended) A method for determining oil content of [a seed] an agricultural product comprising the steps of:

disrupting said [seed] agricultural product to produce ground [seed] product;

extracting oil from said ground [seed] product using a solvent;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light;

determining said oil content based on said reflected light.

28. (Amended) The method of claim 27, further comprising the step of introducing said solvent into a second solvent prior to said step of evaporating.

29. (Amended) The method of claim 27, wherein said step of disrupting comprises the step of grinding

30. (Amended) A method for determining oil [content of an agricultural material] presence within a solvent/oil mixture, comprising the steps of:

[extracting oil from said material using a solvent;]

evaporating said solvent/oil mixture in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light; and,

determining said oil [content] presence based on said reflected light.

31. (Amended) A method for determining oil [content of a batch seed sample] presence within a solvent/oil mixture, comprising the steps of:

[extracting oil from said batch seed sample using a solvent;]

introducing said solvent/oil mixture into a solvent carrier to form a processing solvent;

evaporating said processing solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light; and,

determining said oil [content] presence based on said reflected light.

32. (Amended) A method for selecting a seed having an enhanced oil content, comprising the steps of:

extracting oil from a seed using a solvent;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light;

determining [said] oil content of the seed based on said reflected light; and,

selecting a seed with a similar genetic background to said seed based on said determined oil content.

33. (Amended) A method according to claim 32, further comprising the step of germinating said selected seed with a similar genetic background.

34. (Amended) A method according to claim 32, further comprising the step of placing in a container said [related] selected seed.

35. (Amended) A method of introgressing a trait into a plant comprising the steps of:

extracting oil from a seed using a solvent;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light;

determining said oil content based on said reflected light;

selecting a seed with a similar genetic background to said seed based on said determined oil content;

growing a fertile plant from said [related] selected seed; and,

utilizing said fertile plant as either a female parent or a male parent in a cross with a second plant.

36. (Amended) A method according to claim 35, further comprising selecting a progeny of said cross [having said trait] having determined oil content.

44. (Amended) A method for determining oil content of a seed comprising the steps of:
extracting oil from a seed using a solvent;
nebulizing said solvent [and] containing said extracted oil under high pressure into a device capable of evaporating said solvent;
evaporating said solvent in a stream of gas in said device to form oil particles;
directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
detecting said reflected light;
determining said oil content based on said reflected light.

45. (Amended) A method for selecting a seed having an enhanced oil content, comprising the steps of:

a) extracting oil from a seed using a solvent;
b) evaporating said solvent in a stream of gas to form oil particles;
c) directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
d) detecting said reflected light;
e) determining said oil content based on said reflected light;
f) repeating steps a) through e) one or more times, and,
g) selecting one or more seeds based on said oil content.

Exhibit "B" - pending claims:

1. (Amended) A method for determining oil content of a seed comprising the steps of:
extracting oil from a seed using a solvent;
evaporating said solvent in a stream of gas to form oil particles;
directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
detecting said reflected light; and,
determining said oil content based on said reflected light.

2. The method of claim 1, wherein said seed has a mass of less than 100 micrograms.

3. The method of claim 1, wherein said seed has a mass of less than about 50 micrograms.

4. The method of claim 1, wherein said seed has a mass of less than about 25 micrograms.

5. The method of claim 1, wherein said solvent comprises an organic solvent.

6. The method of claim 1, wherein said solvent comprises a nonpolar solvent.

7. The method of claim 1, wherein said solvent is selected from the group consisting of hexane, petroleum ether, alcohol, decane, and acetonitrile.

8. The method of claim 1, wherein 0.5 to 50 mL of said solvent is used.

9. The method of claim 1, wherein 1 to 3 mL of said solvent is used.

10. (Amended) The method of claim 1, wherein said step of evaporating is performed in an evaporative light scattering detector.

11. The method of claim 1, wherein said stream of gas comprises nitrogen.

12. (Amended) The method of claim 1, further including the step of introducing said solvent into said stream of gas at a rate between 0.3 and 5 milliliters per minute.

13. The method of claim 1, wherein said light is laser light.

14. (Amended) The method of claim 1, wherein said step of detecting said reflected light is performed with a silicon photodiode.

15. (Amended) The method of claim 1, further including the step of heating said stream of gas.

16. (Amended) The method of claim 1, further comprising the step of separating said seed from said solvent after said step of extracting.

17. (Amended) The method of claim 16, wherein said step of separating is performed by centrifugation.

18. (Amended) The method of claim 1, further comprising the step of introducing said solvent into a second solvent prior to said step of evaporating.

19. The method of claim 1, wherein said method is performed in less than 6.5 minutes.

20. The method of claim 1, wherein said method is performed in less than 1.5 minutes.

21. The method of claim 1, wherein said seed is maize.

22. The method of claim 1, wherein said seed is soybean.

23. The method of claim 1, wherein said seed is rapeseed.

24. (Amended) A method for determining oil content of a sample comprising the steps of:
extracting oil from a sample using a solvent;
separating said solvent from said sample;
evaporating said solvent in a stream of gas to form oil particles;
directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
detecting said reflected light; and,
determining said oil content based on said reflected light.

25. (Amended) The method of claim 24, further comprising the step of introducing said solvent into a second solvent prior to said step of evaporating.

26. (Amended) The method of claim 24, wherein said step of separating is performed by centrifugation.

27. (Amended) A method for determining oil content of an agricultural product comprising the steps of:

disrupting said agricultural product to produce ground product;
extracting oil from said ground product using a solvent;
evaporating said solvent in a stream of gas to form oil particles;
directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
detecting said reflected light;
determining said oil content based on said reflected light.

28. (Amended) The method of claim 27, further comprising the step of introducing said solvent into a second solvent prior to said step of evaporating.

29. (Amended) The method of claim 27, wherein said step of disrupting comprises the step of grinding

30. (Amended) A method for determining oil presence within a solvent/oil mixture, comprising the steps of:

evaporating said solvent/oil mixture in a stream of gas to form oil particles;
directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
detecting said reflected light; and,
determining said oil presence based on said reflected light.

31. (Amended) A method for determining oil presence within a solvent/oil mixture, comprising the steps of:

introducing said solvent/oil mixture into a solvent carrier to form a processing solvent;
evaporating said processing solvent in a stream of gas to form oil particles;
directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
detecting said reflected light; and,
determining said oil presence based on said reflected light.

32. (Amended) A method for selecting a seed having an enhanced oil content, comprising the steps of:

extracting oil from a seed using a solvent;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light;

determining oil content of the seed based on said reflected light; and,

selecting a seed with a similar genetic background to said seed based on said determined oil content.

33. (Amended) A method according to claim 32, further comprising the step of germinating said selected seed with a similar genetic background.

34. (Amended) A method according to claim 32, further comprising the step of placing in a container said selected seed.

35. (Amended) A method of introgressing a trait into a plant comprising the steps of:

extracting oil from a seed using a solvent;

evaporating said solvent in a stream of gas to form oil particles;

directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;

detecting said reflected light;

determining said oil content based on said reflected light;

selecting a seed with a similar genetic background to said seed based on said determined oil content;

growing a fertile plant from said selected seed; and,

utilizing said fertile plant as either a female parent or a male parent in a cross with a second plant.

36. (Amended) A method according to claim 35, further comprising selecting a progeny of said cross having determined oil content.

37. A method according to claim 35, wherein said fertile plant is said male parent said cross.

38. A method according to claim 35, wherein said fertile plant is said female parent to said cross.

39. A method according to claim 35, wherein said plant is selected from the group consisting of alfalfa, apple, banana, barley, bean, broccoli, castorbean, citrus, clover, coconut, coffee, maize, cotton, cucumber, Douglas fir, Eucalyptus, Loblolly pine, linseed, melon, oat, olive, palm, pea, peanut, pepper, poplar, Radiata pine, rapeseed, rice, rye, sorghum, Southern pine, soybean, strawberry, sugarbeet, sugarcane, sunflower, sweetgum, tea, tobacco, tomato, turf, and wheat.

40. A method according to claim 35, wherein said plant is selected from the group consisting of cotton, maize, soybean, rapeseed, rice, and wheat.

41. A method according to claim 35, wherein said plant is maize.

42. A method according to claim 35, wherein said plant is soybean.

43. A method according to claim 35, wherein said plant is rapeseed.

44. (Amended) A method for determining oil content of a seed comprising the steps of:
extracting oil from a seed using a solvent;
nebulizing said solvent containing said extracted oil under high pressure into a device capable of evaporating said solvent;
evaporating said solvent in a stream of gas in said device to form oil particles;
directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
detecting said reflected light;
determining said oil content based on said reflected light.

45. (Amended) A method for selecting a seed having an enhanced oil content, comprising the steps of:

a) extracting oil from a seed using a solvent;
b) evaporating said solvent in a stream of gas to form oil particles;
c) directing light into said stream of gas and said oil particles, thereby forming reflected light from the oil particles;
d) detecting said reflected light;
e) determining said oil content based on said reflected light;
f) repeating steps a) through e) one or more times, and,

g) selecting one or more seeds based on said oil content.

46. (New) A device, comprising:

a nebulizer that mixes a stream of gas with a mixture comprising a solvent and oil to create a dispersed spray;

a drift tube that receives the dispersed spray and within which the solvent evaporates leaving dispersed particles of the oil flowing in the stream of gas;

a source of emitted light that is directed into the drift tube and reflects off the flowing dispersed particles of oil; and

a light detector operable to produce an output signal proportional to the amount of light reflected off the flowing dispersed particles of oil, the signal being indicative of the amount of oil present within the mixture.

47. (New) The device of claim 46 wherein the oil is extracted from at least one seed using the solvent.

48. (New) The device of claim 46 further including a chromatograph connected to receive the output signal and produce a visual quantity indication of the flowing dispersed particles of oil.

49. (New) The device of claim 46 wherein the source of light produces light capable of reflection off particles of oil.

50. (New) The device of claim 49 wherein the produced light is laser light.

51. (New) The device of claim 46 wherein the light detector comprises a photodetector.

52. (New) The device of claim 46 wherein the solvent is selected from the group consisting of hexane, decane, petroleum ether, an alcohol, isopropanol and acetonitrile.

53. (New) The device of claim 46 wherein the mixture comprises a supernatant.

54. (New) The device of claim 46 wherein the stream of gas comprises a gas selected from the group consisting of an inert gas and a noble gas.

55. (New) The device of claim 46 wherein the solvent comprises a first solvent and a second solvent.

56. (New) The device of claim 55 wherein the first solvent is used to extract the oil from at least one seed.

57. (New) The device of claim 56 wherein the first solvent is selected from the group consisting of hexane, decane, petroleum ether, an alcohol, isopropanol and acetonitrile, and the second solvent is selected from the group consisting of isopropanol, hexane, and mixtures thereof.

58. (New) A device, comprising:

an input source of a mixture comprising a solvent and an unknown amount of oil; and

an evaporative light scattering detection system that (a) receives the mixture from the input source, (b) forms the received mixture into a dispersed spray from which the solvent evaporates leaving dispersed particles of flowing oil that scatter light, and (c) detects the scattered light to provide an indication that oil is present in the mixture.

59. (New) The device of claim 58 wherein the evaporative light scattering detection system comprises:

a high-performance liquid chromatography (HPLC) device that evaporates the solvent from the mixture leaving the dispersed particles of flowing oil;

a source of emitted light that is reflected off the dispersed particles of flowing oil; and

a light detector operable to produce an output signal responsive to detection of reflected light that indicates the presence of oil.

60. (New) The device of claim 59 wherein the output signal is proportional to the amount of reflected light, the output signal being indicative of an amount of oil present within the mixture.

61. (New) The device of claim 59 wherein the high-performance liquid chromatography (HPLC) device comprises:

a nebulizer that mixes a stream of gas with the mixture to create a dispersed spray; and

a drift tube that receives the dispersed spray and within which the solvent evaporates leaving dispersed particles of the oil flowing in the stream of gas.

62. (New) The device of claim 61 wherein the mixture comprises a supernatant.

63. (New) The device of claim 59 further including a chromatograph connected to receive the output signal and produce a visual quantity indication of the dispersed particles of flowing oil.

64. (New) The device of claim 59 wherein the source of light produces light capable of reflection off particles of oil.

65. (New) The device of claim 64 wherein the produced light is laser light.

66. (New) The device of claim 58 further including means for detecting an amount of scattered light, the detected amount of scattered light being indicative of an amount of oil present within the mixture.

67. (New) The device of claim 58 wherein the solvent comprises a first solvent and a second solvent.

68. (New) The device of claim 67 wherein the first solvent is used to extract the oil into the mixture from at least one seed.

69. (New) The device of claim 67 wherein the first solvent is selected from the group consisting of hexane, decane, petroleum ether, an alcohol, isopropanol, and acetonitrile, and the second solvent is selected from the group consisting of isopropanol, hexane, and mixtures thereof.

70. (New) A device, comprising:

a first input source of a mixture comprising a first solvent and an unknown quantity of oil;

a second input source of a second solvent including means for introducing the mixture into the second solvent;

a third input source of a stream of gas;

a nebulizer that mixes the stream of gas with the second solvent to create a dispersed spray containing first solvent droplets, second solvent droplets and included oil;

a drift tube that receives the dispersed spray and within which the first and second solvent droplets evaporate leaving drifting dispersed particles of the oil;

a source of emitted light that is directed into the drift tube and reflects off the drifting dispersed particles of oil; and

a light detector operable to produce an output signal responsive to detection of reflected light that indicates the presence of oil in the mixture.

71. (New) The device of claim 70 wherein the nebulizer and drift tube form a high-performance liquid chromatography (HPLC) device that evaporates the first and second solvents and releases the dispersed particles of oil from the mixture.

72. (New) The device of claim 70 wherein the output signal is proportional to the amount of reflected light, the output signal being indicative of an amount of oil present within the mixture.

73. (New) The device of claim 72 wherein the oil is extracted from the at least one seed using the first solvent.

74. (New) The device of claim 72 further including a chromatograph connected to receive the output signal and produce a visual quantity indication of the dispersed particles of oil.

75. (New) The device of claim 70 wherein the source of light produces light capable of reflection off particles of oil.

76. (New) The device of claim 75 wherein the produced light is laser light.

77. (New) The device of claim 70 wherein the light detector comprises a photodetector.

78. (New) The device of claim 70 wherein the first solvent is selected from the group consisting of hexane, decane, petroleum ether, an alcohol, isopropanol, and acetonitrile, and the second solvent is selected from the group consisting of isopropanol, hexane, and mixtures thereof.

79. (New) The device of claim 70 wherein the mixture comprises a supernatant.

80. (New) The device of claim 70 wherein the stream of gas comprises a gas selected from the group consisting of an inert gas and a noble gas.

81. (New) The method of claim 24 wherein the sample is selected from the group consisting of a seed, an agricultural product and a plant tissue.